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Domestic Flies — Public Health Significance and Biology

ROY F. FRITZ, Scientist, Bureau of Vector Control *

During 1949 the Bureau of Vector Control, State Department of Public Health, increased its services on fly control by establishing a fly control investigation unit. Roy F. Fritz, Scientist, U. S. Public Health Service, on detail to the bureau, was assigned to develop this program.

Fly training institutes were held for local health department personnel both during last summer and again this spring. Limited assistance to local health departments is available for fly training programs as requested. In addition, bureau personnel have been assisting local communities in evaluating existing fly problems and in developing feasible methods of control.

This article by Mr. Fritz, which is devoted to the public health significance and biology of flies, will be followed in the next issue of *California's Health* by Part II, Fly Control.

Few public health problems have achieved the publicity and interest of the general public in recent years as has that of the control of domestic flies. In many instances local health departments have been forced to greatly intensify their sanitation activities and even to launch into large-scale fly control programs because of public demand. However, the control of domestic flies is not an easy matter and must be carefully considered and planned before large sums of public money are expended.

Public Health Significance

Domestic flies have been suspected as transmitters of human disease since ancient times and actually have been incriminated by strong circumstantial evidence in many instances. The hairy bodies and sticky feet of flies are ideally suited for the collecting, harboring, and carrying of a great many disease-producing bacteria. Chinese workers found an average of 3,683,000 bacteria per fly in slum areas of Peiping and 8 to 10 times as many inside the flies. The habits of these flies of alternately feeding on filth and human foods and regurgitating previous meals in order to facilitate solution and intake of solid foods add to their ability as disease carriers.

* On detail from Communicable Disease Center Activities, Region X, Federal Security Agency, Public Health Service.

Domestic flies have long been incriminated in the transmission of typhoid, cholera, yaws, intestinal protozoa, and eggs of parasitic worms. However, in the United States today it can be said that they are currently of no significance in such transmission because of sanitary advances.

Diarrheal Diseases

In the matter of diarrheal diseases, however, there is strong evidence that, under certain circumstances at least, flies may play an important role in transmission of shigellosis (bacillary dysentery). For more than 15 years this problem has been studied by epidemiological teams of the U. S. Public Health Service. In 1946 a fly control and epidemiological study was undertaken in Hidalgo County, Texas, along the Rio Grande Valley. The plan of this study was to control flies in one series of towns, to do no control work in another series and to compare the dysentery and diarrheal rates.

The data from this project (Watt and Lindsay, 1948) show that in an area such as that studied, where the population consisted of a high proportion of Spanish Americans, where the environmental sanitation was poor, where diarrheal disease rates were high and flies were abundant, flies appeared to play a significant role in the transmission of shigellosis. Shigellosis was found



to be significantly lower in the series of towns where fly control was achieved. Late in 1947, when control procedures were reversed in the two series of towns, fly populations quickly increased in those towns formerly under control and shigellosis became significantly higher than in the towns that were currently under fly control. The incidence of salmonellosis apparently was not so closely related to the fly population.

In California the diarrheal disease problem is extremely complex. According to the Acute Communicable Disease Service, the problem involves some five population groups, some of which may be affected by flies. The disease occurs in (1) migrant labor population groups, (2) mountain resort area tourists, (3) urban groups, (4) institutional groups, and (5) newborn infant groups.

Incomplete data for 1949 indicate that approximately 800 cases of diarrheal disease occurred in six counties in the San Joaquin Valley. During the same period, 76 deaths were attributed to this cause.

While some studies have been done by the state viral and rickettsial disease laboratory in attempts to determine the etiological agent, there is a real need for an epidemiological and laboratory study to determine the etiological agents involved in the diarrheal diseases and the possible role played by flies in their transmission.

Role of Flies in Poliomyelitis

Many conflicting stories have been circulated during recent years concerning the role of flies in transmission of poliomyelitis. The evidence supporting the fly as a transmitter is largely the fact that the virus has been recovered from several species of flies (*Musca domestica*, *Phaenicia sericata*, *Phormia regina*, and *Sarcophaga* spp.) during epidemics of the disease studied since 1911. In one experiment, mashed bananas exposed to flies (and the air) in the home of a poliomyelitis victim apparently caused the disease in a monkey to which they were fed. However, much of the epidemiological evidence gathered in recent years makes it appear rather unlikely that flies play an important role in transmission of this disease.

From the results of a number of field experiments in attempting to control poliomyelitis epidemics by emergency fly control, a meeting of experts on this disease in 1948 concluded for the National Foundation of Infantile Paralysis that "• • • on the basis of present scientific evidence, there is no justification to initiate emergency community insect control in the hope of influencing an epidemic of poliomyelitis." Considerable research is being pursued at the present time by a number of agencies on this problem.

According to Dr. James Watt, U. S. Public Health Service, who is in charge of the diarrheal study in Hidalgo County, Texas, when a poliomyelitis epidemic

occurred in the study area, there was no significant difference in incidence of poliomyelitis between towns where flies were abundant and where flies were being controlled.

Biology of Domestic Flies

It is necessary to understand the biology of the various species of domestic flies in order to ascertain the exact nature and extent of the fly problem in any community and to be able to recommend the most feasible measures for its solution. The assistance of a specialist in fly control is of considerable value in this matter.

The term "domestic flies" is used to denote that group of flies that have habits closely associated with man and his habitation. These flies are commonly seen flying in and about the house.

In general these domestic flies develop in warm, moist organic matter such as animal excrement, garbage, dead animals, and animal feeds. Almost all of the species lay large numbers of eggs on the type of material that will be suitable for larval development. These eggs generally hatch in a matter of hours, and the tiny white maggots develop rapidly. In about 3 to 15 days under favorable conditions the larvae reach maturity and begin to move to a drier part of the culture media or the soil to pupate. After a few days the adult fly emerges from the reddish-brown puparium.

The adult fly is covered by many hairs, especially on its legs and feet. Each of its six feet is equipped with a hairy pad through which a sticky secretion exudes. Therein rests the fly's ceiling-walking magic. Domestic flies, which are voracious feeders, are fitted with a proboscis which has a spongy pad at the tip. All foods are sucked up in liquid form through a central tube in the proboscis. When faced with a solid food such as sugar or cake icing, the fly regurgitates or spits back a small amount of liquid food from its reservoir stomach (the crop). This liquid dissolves a portion of the solid which is then drawn into the crop.

Domestic flies readily feed on animal excrement, animal wounds and sores, garbage, organic refuse, sirups, cake icing, sugar and most human foods. When feeding or not, many of the domestic flies find it necessary to defecate frequently. The darker flyspecks noted on windows, walls, or ceilings are fecal spots, and the lighter ones are vomit spots caused when the fly tests the surface as a possible food source.

Although domestic flies are capable of flying 13 miles or more, they generally are found to cling closely to the area where they were produced. Thus, city fly problems are generally found to be localized in certain blocks and within those blocks to certain premises. Under conditions of extreme abundance these flies will be forced to fly longer distances because of population pressure.

Common Fly Species

Although there are many thousands of species of flies known, only a few species of domestic flies are generally found in any locality. Some facts of the biology of the most common species follow:

Housefly, *Musca domestica*. Small grayish fly. Found most frequently in and around home. Prefers animal excrement as larval habitat (as many as 1,500 to 2,000 larvae can be found per pound of excrement). Also infests garbage, kitchen wastes, brewers' grain, animal feeds, lawn clippings, and other decomposing vegetable and animal matter. Larval period, about five days. Life cycle, approximately 10 days under favorable conditions.

Female housefly deposits from 120 to 150 eggs at a time and can produce at least six clutches of eggs at intervals of three or four days. Longevity of adult, generally 30 to 60 days. Prefers to rest in homes and other sheltered places, day and night.

Green bottle flies, *Phaenicia* spp., include several species. Most common in California are *Phaenicia sericata* and *P. pallescens*. Slightly larger than housefly. Bright green. Distributed throughout United States and are often most abundant of blowflies present. Dead animals, garbage, and animal excrement are prolific sources. Larvae may infest purulent wounds of animals.

Larvae of *P. sericata* have been used in surgery to remove dead tissues and purulent exudates from wounds.

Females deposit eggs in clutches of about 180 and lay from 1,800 to 3,000 eggs. Larval feeding period is short, $1\frac{1}{2}$ to $9\frac{1}{2}$ days.

Adults are less likely to be found in houses than the housefly and, consequently, are less likely to contaminate human food. During night they are usually found resting out-of-doors, in trees, bushes, grass and on the sides of buildings.

Black blowfly, *Phormia regina*. About same size as green bottle fly, but is blackish green. Found throughout United States, particularly during cool weather and, in some areas, most frequently in spring and fall. Adults are strong fliers.

Larvae are found in great numbers in carcasses of animals and garbage containing meat scraps. They are an important cause of secondary myiasis in animal wounds and have been used along with *P. sericata* in postoperative surgery. Soiled wool of sheep is often attacked by masses of these larvae.

Secondary screw-worm fly, *Callitroga macellaria*. Green, with three black longitudinal stripes on thorax. Has large head with yellow front. Primarily a scavenger attracted to garbage, animal wounds and prepared meats. It is important secondary myiasis producer,

particularly in southern states, but is said not to invade living tissues.

Occurs in many areas of California, but is generally not abundant, except possibly at abattoirs. It is a strong flier. Normally lives from two to six weeks as an adult. Under optimum conditions life cycle can be completed in 12 days.

Blue bottle flies, *Calliphora* spp., include four species in California. Thorax of this rather large fly is slate gray and abdomen is bright blue. It is slow-flying, loud-buzzing. Found most abundantly in spring and fall throughout United States. Source appears to be carrion, but wounds of living animals may be attacked. Life cycle, about 15 to 20 days.

Flesh flies, *Sarcophaga* spp., include 40 or more species in California. Species vary from small to large. All are gray, with checkered abdomen. Larvae have been known to cause myiasis, particularly traumatic and intestinal, of man. Normally produced in carrion and in excrement. Dog feces often produce large numbers of certain species.

Eggs hatch within body of female and are deposited as small, active larvae, which mature in three or four days. Life cycle, 10 days to two weeks. Adults are seldom seen in house.

Lesser housefly, *Fannia canicularis*, is grayish, closely resembles housefly, but considerably smaller, with oversize wings. Readily infests home and premise. Frequently seen hovering in mid-air or flying hither and thither in middle of room. Does not appear to be especially attracted to kitchen. Seldom found resting on food. Eggs are laid on excrement and decaying vegetable matter. Dog and cat excrement may be significant source of this species under certain circumstances.

Larvae are not the traditional white maggots, but are flattened, straw-colored, slow-moving organisms with projections along side and top of body. Persons searching for source of flies around chicken yards often overlook larvae of this species in chicken manure.

Latrine fly, *Fannia scalaris*. Similar to lesser housefly, but bluish black. Habits and larval appearance resemble lesser housefly.

Fly control measures will be presented in a forthcoming article.

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California's Program of Training for Public Health Workers

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"There is every indication that within a reasonable time all responsible positions in the public health field will be filled by applicants that have had suitable training."*

Long before the author of this statement assumed his present position as Professor of Public Health and Preventive Medicine at Cornell University Medical College, New York City, he foresaw the great need for trained people in the public health field.

Ever since the early 1930's the California State Department of Public Health has endeavored to measure up to this sage prediction as expressed by Doctor Smillie. The major source of funds for training scholarships has been from the Federal Government. Since 1948 there have been additional state funds for this purpose. Funds from these two sources have amounted to some \$240,000 to date and have made possible an extensive training program.

The California program has been directed toward several distinct ends, namely, (1) the professional training of new recruits to fill the numerous vacancies in health departments of the State, (2) postgraduate and specialized training for promising workers who have shown superior abilities, and (3) professional training for specialized personnel in order that California may reap the benefit of the newer scientific discoveries.

A review of the training grants for the fiscal year, July 1, 1949, to date (March 22, 1950), indicates that the major emphasis has been placed on the training of new recruits and employees of local health departments. Of 190 trainees in this period, 83 were new to the field, 53 came from local health departments, 29 others were for the most part connected with hospitals, and 25 were on the staff of the State Department of Public Health.

Training grants have benefited all specialty fields in public health. Academic training has been made available to public health nurses, health educators, public health physicians, sanitary engineers, sanitarians, bacteriologists, dentists, physical and occupational therapists, nutritionists, and public health analysts.

Public Health Nurses. By far the largest number of trainees have been graduate nurses preparing for the field of public health nursing. In October, 1949, there were 88 vacancies in budgeted public health nursing positions in local health departments of the State. While scholarship grants were made to only 38 nurses in all for academic training, including those who com-

pleted training which was begun the previous fiscal year and those who started training during the present year, this aid has been of material assistance in recruiting trained people for this field.

One nurse associated with the maternity ward of a large hospital was sent for a special course in the care of premature babies. Another nurse, a consultant on the State Health Department staff, whose work is that of advising local health departments, was given assistance in learning the newest developments in pediatric nursing.

Health Educators. Several promising candidates were assisted in becoming health educators through attendance at the School of Public Health in Berkeley. More and more health departments are adding health educators to their staffs, for it is realized that a large part of the task of health protection comes about through public education.

Public Health Physicians. The creation of a physician is a long, costly process involving many years of study in college and in the medical school. To induce physicians to take further training and enter the public health field is not easy. Last year but one new candidate applied for scholarship aid. He was willing to transfer from private practice in a rural area so that he could return to a rural area as a health officer. Last October there were 16 vacancies in medical positions in local health departments of the State.

Several physicians already in local health departments for a year or more have applied for training aid at a school of public health and have been approved. Two State Health Department physicians who serve as consultants to local health departments in the specialized field of industrial hygiene and epidemiology were granted training aid. A physician dividing his time between health department and hospital work was aided in securing special training in the care of newly born infants.

Sanitarians. The field of sanitation needs more trained people. When the state law requiring a minimum of two years of college in order to become a registered sanitarian went into effect in 1946, there were already several hundred people working in this field in local health departments who did not meet academic qualifications specified in the law. In fairness to this employed group they were accepted as meeting the requirements for registration. Since that time many young men with two and three years of college and an increasing number of college graduates have become

* Wilson G. Smillie, M.D., Dr. P.H., *Public Health Administration in the United States*, The Macmillan Co., 1936, p. 420.

available for sanitarian positions. These men have been granted scholarships to take a special course in sanitation, and those without any experience in a health department have been assisted in receiving a broad educational training in the widespread duties of a sanitarian in a local department. The training program has been of material assistance in building a group of sanitarians in the State with higher educational backgrounds.

Bacteriologists. Newly developed laboratory techniques of assistance in the early diagnosis of cancer are of very recent origin. Bacteriologists have been given training aid to learn these new techniques so that the citizens of California may have the full benefit of this valuable knowledge.

One bacteriologist from a local health department was sent for four weeks' special training at the U. S. Public Health Service Laboratory in Atlanta, Georgia, to learn more about the laboratory identification of parasitic diseases. It is vital that our own technicians have the opportunity to keep up to date on these new procedures.

A considerable number of young college graduates were granted aid to take the six months' training course at the State Health Department laboratory to prepare them for service in local health departments.

Dentists. Two practicing dentists living in rural areas where dentistry for children is difficult to obtain were sent to school for a brief period to learn the special aspects of children's dentistry. This service is of material benefit to the children of these areas.

Therapists. Occupational and physical therapists have been sent for special training in the care of children with cerebral palsy.

Nutritionists. A dozen nutritionists were called together in an institute for discussion and planning of a program for extending the public knowledge of dietaries and nutrition.

Public Health Analysts. Seventy-three statistical and records people from local health departments were called together for an institute of several days' duration to learn about the newer methods of handling birth and death certificates. If our mortality records are to have meaning, it is extremely important that accurate and standardized methods be used in handling and tabulating such information.

Sanitary Engineers. The State needs more sanitary engineers. Safe water supplies and adequate sewage disposal methods are especially necessary in California. But the engineer needs a wider experience in sanitation. Only one engineering graduate chose to enter the public health field. He was given a scholarship to provide three months' extensive experience in the problems of sanitation encountered by a local health department.

To keep pace with effective practices in the ever changing field of public health, California needs trained people. It is the ambition of the State Department of Public Health to assist in meeting these needs to the best of its resources and abilities.

Morbidity Review Indicates Change In Measles Cycle

An unusually low incidence of measles in California this year, which follows two years of high incidence, provides an interesting study of cycles. The recording of only 1,850 cases for the first quarter of 1950 is much lower than the five-year median of 16,527 for the three-month period. Not since before 1930 has California experienced a "three-year" cycle such as indicated by the present figures.

Records of the Acute Communicable Disease Service, State Department of Public Health, show that prior to 1929 the morbidity experience in measles was a low incidence every third year. But in 1928 and 1929 there were two "low" years. Then the cycle shifted to a number of "high" years broken by one of low incidence. From 1930 to 1936 all years were "high," with rates ranging from 229-835 per 100,000 population. In 1937 the rate was low at 94. Again from 1938 to 1946 the rates were high, ranging from 178-1,690. After this nine-year interval of high rates, the 1947 rate dropped to a low of 86. Both 1948 and 1949 were high years, which, when followed by a low year in 1950, would indicate a reversion back to the three-year cycle.

Mumps, with 13,715 reported cases during the first three months of 1950, exceeded the five-year median. Poliomyelitis, with 196 cases reported, fell into a normal pattern for the end of last year's season rather than the beginning of a new year. The poliomyelitis year is considered to run from April 1st to March 31st.

San Bernardino Position

The San Bernardino County Department of Civil Service and Personnel announces an opening for the position of assistant director of public health to be responsible for the venereal disease program and to assist with the administration of general county health work. Applicants must be eligible for California license and have one year of experience in an approved public health agency in charge of a venereal disease clinic.

Preference will be given to candidates having a degree (M.P.H.) in public health. Starting salary is \$559. Work week is 40 hours. Applications should be directed to the Department of Civil Service and Personnel, County of San Bernardino, 242 Third Street, San Bernardino.

Annual State Tuberculosis Medal Awarded to Dr. Chesley Bush

Dr. Chesley Bush, medical officer in the tuberculosis service of the State Department of Public Health and a long-time worker in the field of tuberculosis, has been awarded the California medal of the State Tuberculosis and Health Association. This honor is bestowed annually for meritorious service in the campaign against tuberculosis. The medal was presented to Doctor Bush at the annual C. T. H. A. meeting in San Diego March 31st.

Doctor Bush has also recently received two testimonials of his outstanding work in tuberculosis, one from the Alameda Tuberculosis and Health Association, and the other from the Board of Supervisors of Alameda County and the county institutions commission.

Doctor Bush was formerly director of Arroyo Del Valle Sanatorium in Livermore, Alameda County, from which position he retired last year. He then served for six months as executive secretary of the California Tuberculosis and Health Association, leaving that post to join the staff of the State Department of Health in November, 1949.

Botulism, Trichinosis, Food Poisoning Cases Reported in Quarter

During the first quarter of 1950 outbreaks of botulism, trichinosis and food poisoning were reported to the State Department of Public Health. Two cases of botulism in which home-canned cactus was incriminated were reported from Los Angeles. One person died 20 hours after eating the food, but the second victim, whose symptoms developed more slowly, was given prophylactic antitoxin and recovered. Two others at the meal did not eat the cactus. Type A botulinus toxin was recovered from the jar.

In March three cases of trichinosis were reported from San Joaquin County. The outbreak occurred in one family, with the source being given as homemade salami. A specimen was positive for trichinella larvae.

Three extensive outbreaks of food poisoning, involving 85 persons in February, and 230 and 300 in separate March outbreaks, were reported in a large hospital in Southern California. Etiology was undetermined.

A main objective of consultations, inspections and home-visits is to bring sound health information and advice to the individual and his family. To miss an educational opportunity when rendering a health service is now considered a deliberate waste of public money.—*Dr. Jules Gilbert, Ministry of Health, Province of Quebec.*

Local Health Officers Meet

On the agenda of the California Conference of Local Health Officers, meeting in San Diego May 1-3, are reports of six study committees of the Committee on Administrative Practices. Recommendations in the interests of advancing public health in California have been prepared by Study Committees on Records and Reports; Recruitment, Training and Personnel Standards; Disease Control and Laboratories; Maternal and Child Health; Environmental Sanitation; and Health Center Construction.

Oil of Cinnamon as a Confection Should Be Discouraged

School children, particularly in the 6- to 12-year age bracket, are practicing a potentially dangerous fad—that of using oil of cinnamon, purchased through druggists, as a "confection." This use has led to complaints involving blistered mouths of the users, according to reports received by the Bureau of Food and Drug Inspections, State Department of Public Health.

Oil of cinnamon, described as a powerful germicide, is seldom used because of its irritating properties. Yet, youngsters make cinnamon sticks by impregnating matchsticks or toothpicks with the oil, and then suck or chew the stick until the flavor is dissipated.

Citing the potential danger of such use, the Bureau of Food and Drug Inspections points out that the schools and parents should discourage the fad. Oil of cinnamon should not be sold except to adults, the ultimate use should be determined, and, if the oil is to be used in the making of cinnamon sticks, the purchaser should be advised as to the potential danger attendant to such use.

Social Welfare Association to Meet

Social welfare in California at the mid-century will be the theme of the California Association for Social Welfare's annual meeting in Santa Barbara May 21-24. Main topics will include (1) an assessment of population pressures upon jobs and jobseekers, upon children, upon housing; (2) consideration of needs and costs with respect to health and medical care, recreation and youth services, and problems of income for families without jobs; (3) problems of voluntary and public planning and financing; and (4) analysis of some aspects of professional practice. A number of national and state authorities in the fields of health and welfare will participate in the conference.

Use of Illegal Meat Preservatives Found in Pasadena Survey

Use of illegal preservatives in ground beef sold by a Pasadena supermarket has resulted in conviction of its proprietor on six counts of violation of Section 26510 of the California Health and Safety Code. The current case was a second offense for the owner within a year.

In July, 1949, inspectors of the Bureau of Food and Drugs, State Department of Public Health, obtained samples of meat from the supermarket which laboratory tests proved to be adulterated with a large amount of sodium sulfite. This prohibited chemical, commonly used for cleaning washrooms and butchers' equipment, can retard and cover up signs of decay in meat. As a result of the investigation, the market owner pleaded guilty to a food law violation and was fined \$500.

In October, 1949, a city-wide meat survey was carried on in Pasadena by inspectors of the Bureau of Food and Drugs and the Pasadena City Health Department. During the inspection of 225 food establishments, 40 samples of ground beef were taken on suspicion of being adulterated within the meaning of the state law. Laboratory analysis indicated adulteration in 34 out of the 40 samples.

Among the 34 samples were some taken from the supermarket whose owner had received the previous conviction and from five restaurants served by his market. Charges pressed on six counts brought a jury conviction. The market owner was sentenced for periods totaling six years. The sentence was suspended on condition the first six months be spent in the Los Angeles county jail, and the owner be placed on an additional two years' probation.

The defendant is appealing the case to a higher court.

Radiological Health Course

The Radiological Health Branch of the Public Health Service is sponsoring, on a nation-wide basis, a two-day lecture series for public health personnel dealing with the topic of "Radiological Health." The training course for Region X of the Federal Security Agency will be held in Room 59, Federal Office Building, San Francisco, May 22-23, Dr. Alonzo Brand, Regional Medical Director, announces.

Local health officers are invited to attend or to send a representative. Those planning to attend should give advance notice to Dr. Ellis Sox, Chief, Division of Local Health Services, State Department of Public Health.

There are more juvenile delinquents with impaired hearing than with any other physical defect.—*National Auricular Foundation.*

Washington Air Pollution Meeting To Consider Smog Effects

Scientific papers dealing with suspected effects of smog and other atmospheric contaminants on cancer and respiratory diseases are scheduled for presentation at a technical conference on air pollution being held in Washington May 3-5. An attendance of 500, including some British experts, is expected for this first conference to be held under federal sponsorship. More than 80 scientific papers are to be presented.

Cosponsors are the Bureau of Mines, the U. S. Public Health Service, Department of Commerce, Army and Navy Medical Departments, Atomic Energy Commission, Department of Agriculture, and the Department of Defense.

Dr. Malcolm H. Merrill, Deputy Director, and Dr. Herbert K. Abrams, Chief, Bureau of Adult Health, are representing the State Department of Public Health at the meeting.

State Mental Health Allocations Total \$350,000 This Year

California has had the use of nearly \$350,000 in funds this fiscal year under the National Mental Health Act, and this money is being constructively utilized in mental health programs developed by and for various communities in the State.

The National Mental Health Act of 1946 granted funds to states for the development of mental health programs other than hospital care of the mentally ill. In California the Governor made this department the State Mental Health Authority to administer funds so granted. However, policy decisions and advice to localities on the use of the federal allocations are provided by an advisory committee composed of members of the State Department of Public Health and the State Department of Mental Hygiene.

These two departments have made progress in coordinating their own programs for developing community services, and both have accepted the guiding principle that plans devised by local people to meet local needs will produce the most effective mental health services in any given community.

Plans for the present fiscal year were submitted by local agencies such as schools, hospitals, clinics, health departments and welfare departments. The planned programs included mental health service, education and training projects.

Agencies receiving funds during the fiscal year July 1, 1949, to June 30, 1950, are as follows:

Alameda Board of Education for mental health institute for educational personnel.

Child Guidance and Consultation Service of San Mateo County, Burlingame, for salary for half-time psychiatrist in child guidance clinic.

Child Development Center of the Children's Hospital of the East Bay, Oakland, in cooperation with the School of Public Health, University of California, for support of training personnel for teaching physicians in maternal and child health, public health nurses of local health departments, and maternal and child health majors at the School of Public Health.

Contra Costa County Mental Hygiene Project, Martinez, for partial support of a consultation and education project of five community agencies including the county schools, county health department, probation department, child welfare, and the county hospital.

Child Guidance Clinic, Children's Hospital for Women and Children, San Francisco, for salary of a social worker for the child guidance clinic.

Long Beach City Health Department for salary of half-time psychiatrist for teaching educational programs of community agencies of Long Beach.

Los Angeles City Health Department for salary of psychiatrist for education and consultation service to health department and community agencies.

Los Angeles County Health Department for salary of half-time psychiatrist for education and consultation programs to the staff of the health department.

Los Angeles County Probation Committee for salary of a part-time psychiatrist for training and clinical service in the outpatient clinic.

Mental Health Service of Santa Clara County for support of salaries of the staff of the all-purpose psychiatric clinic.

Los Angeles Psychiatric Services for salary of half-time psychiatrist.

Napa County Health Department for salary of psychiatric social worker for education and consultation service to the staff of health, welfare, schools, and other community agencies and to work in conjunction with the clinic service of the Napa State Hospital.

Mental Health Society of Northern California for travel expenses for eight consultants attending conference at Asilomar.

Orange County Superintendent of Schools Office for partial support of a psychiatric social worker in the guidance clinic of the county schools.

Sonoma County Mental Hygiene Clinic for support of the Sonoma County Mental Hygiene Clinic.

Santa Barbara City Schools for Mental Health Institute for educational personnel and cooperating community case work agency personnel.

Shasta County Mental Health Society for Mental Health Institute for the practicing physicians and nurses of Shasta County.

State Department of Mental Hygiene for Berkeley Mental Health Clinic; for the establishment of outpatient services at the Camarillo, Patton, Napa, Sonoma, and Pacific Colony State Mental Hospitals; and for special aspects of the administration of community services in the central office.

State Department of Public Health for support of administrative service in the department and funds for educational consultation service to local communities in regard to mental health programs.

Tulare County Health Department for salary of a psychiatric social worker for education and consultation purposes of the staffs of the local community agencies.

The Henrietta Weill Child Guidance Clinic, Bakersfield, for salary of half-time psychiatrist and a full-time psychiatric social worker for the child guidance clinic service to Kern County.

Two training stipends were also provided, one for a psychiatrist, and the other for a psychiatric social worker.

Protecting the health of the worker * * * is a 24-hour-a-day job * * * that covers the whole complex range of prevention, diagnosis, treatment, care and—notably—health education and information.—Dr. Leonard A. Scheele, Surgeon General, U. S. Public Health Service.

California Morbidity Report—March, 1950

CIVILIAN CASES

Reportable diseases	Week ending					Total cases	5-yr. median	Total cases
	3/4	3/11	3/18	3/25	4/1	Mar.	1945-1949 Mar.	Jan-Mar, 1950
Amebiasis.....	9	9	8	22	13	61	16	59
Anthrax.....								
Botulism.....								
Brucellosis (undulant fever).....	3	5	4	1	1	14	18	14
Chancroid.....	9	8	10	4	8	39	62	35
Chickenpox.....	1,562	1,570	1,182	1,048	1,284	6,046	7,084	12,000
Cholera.....								
Coccidioidomycosis, disseminated.....	1			2	3	6	8	18
Conjunctivitis, acute infectious of newborn.....							1	
Dengue.....					2	2	11	25
Diarrhea of the newborn.....					2	2	40	72
Diphtheria.....	9	12	5	5	9	40	72	110
Epidemic typhus.....	6	1	3	3	3	16	4	4
Encephalitis, infectious.....	49	67	51	34	39	233	174	201
Food poisoning.....	9	12	62	77	725	725	16	70
German measles.....	59	62	61	76	74	332	1,748	781
Gonococcus infection.....	372	398	325	334	364	1,793	2,421	3,148
Granuloma inguinale.....		2	325			2	4	4
Hepatitis, infectious.....	4	8	7	9	11	39	16	4
Influenza, epidemic.....	13	11	13	22	21	80	229	281
Leptospirosis (Weill's disease).....		2				2		
Lymphogranuloma venereum.....	1	4	5		3	13	25	20
Malaria.....							8	
Measles.....	342	370	334	372	432	1,850	10,777	3,631
Meningitis, meningococcal.....	6	9	11	7	8	41	49	10
Mumps.....	1,245	1,399	1,169	1,239	1,389	6,441	4,191	13,716
Pertussis.....	194	180	175	122	180	851	567	1,494
Plague.....								
Pneumonia, infectious.....	73	67	57	61	46	304	220	227
Polio (Weill's disease) anterior.....	16	13	6	7	6	48	24	190
Rabies, animal.....	1	3	1	1		6	30	11
Rabies, human.....								
Relapsing fever.....								
Rheumatic fever, acute.....	15	7	7	17	12	58	88	139
Rocky Mountain spotted fever.....								
Salmonella infections*.....	2	1	1	3	2	9	5	29
Shigella infections (bacillary dysentery).....	2	8	6	3	12	31	23	121
Smallpox.....								
Streptococcal infections: Scarlet fever.....	159	155	120	137	145	716	628	1,700
Streptococcal sore throat (and "septic sore throat").....	19	41	19	15	18	112	56	249
Syphilis.....	213	237	209	242	235	1,136	1,932	1,589
Tetanus.....	2	1		1	2	6	7	1
Trachoma.....			1			2	2	0
Trichinosis.....					1	4	1	0
Tuberculosis: Respiratory.....	146	151	201	159	157	814	824	1,436
Other forms.....	2	11	8	5	9	35	58	60
Tularemia.....							1	
Typhoid fever.....	1	3		1	3	8	8	10
Typhus fever.....							1	
Yellow fever.....								
						22,509		48,416

* All types of Salmonella infections now reportable. Prior to January 1, 1949 only A, B and C types were reportable; hence 5-year median not entirely comparable.

Rheumatic fever today constitutes the greatest problem confronting medical men treating health conditions in children.—American Heart Association.

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